CLAIMS:

1. An apparatus comprising:

a magnetic recording head having a gap; and

a magnetic recording medium having a recording layer and a permeable magnetic underlayer proximal to the recording layer, the recording layer having a thickness less than or equal to one-half the width of the gap.

2. The apparatus of claim 1, where the magnetic recording head creates a recording field, where the magnetic recording medium causes an increase in a perpendicular component of the recording field.

3. The apparatus of claim 1, wherein the permeable magnetic underlayer has a permeability of greater than 20.

4. The apparatus of claim 1, wherein the permeable magnetic underlayer has a coercivity in a range of 0.00001 Oe to 100 Oe.

5. The apparatus of claim 1, wherein the permeable magnetic underlayer and the recording layer have a saturation magnetization, and wherein the saturation magnetization of the permeable magnetic underlayer is less than or equal to that of the recording layer.

6. The apparatus of claim 1, further comprising a substrate proximal to the permeable magnetic underlayer.

7. The apparatus of claim 6, where the substrate, the permeable magnetic underlayer, and the recording layer have a thickness that is less than or equal to five micrometers.

8. A magnetic recording medium comprising:

a recording layer;

a substrate; and

a permeable magnetic underlayer between the recording layer and the substrate,

wherein the permeable magnetic underlayer alters a recording field passing through the recording layer.

9. The medium of claim 8, wherein the permeable magnetic underlayer alters the recording field by increasing a perpendicular component of the recording field.

10. The medium of claim 8, wherein the permeable magnetic underlayer alters the recording field by generating an image recording field.

11. The medium of claim 8, wherein the permeable magnetic underlayer has a permeability of greater than 20.

12. The medium of claim 8, wherein the permeable magnetic underlayer has a coercivity in a range of 0.00001 Oe to 100 Oe.

13. The medium of claim 8, wherein the permeable magnetic underlayer and the recording layer have a saturation magnetization, and wherein the saturation magnetization of the permeable magnetic underlayer is less than or equal to that of the recording layer.

14. A magnetic recording medium comprising:

a recording layer;

a permeable magnetic underlayer adjacent the magnetic recording layer; and

a substrate,

wherein the recording layer and the permeable layer are positioned on the substrate, and the thickness of the recording layer is selected as a function of the width of a gap on a recording head.

15. The medium of claim 14, wherein the thickness of the recording layer is selected to be no greater than one half the width of the gap on the recording head.

16. The medium of claim 14, wherein the permeable magnetic underlayer has a permeability of greater than 20.

17. The medium of claim 14, wherein the permeable magnetic underlayer has a coercivity in a range of 0.00001 Oe to 100 Oe.

18. The medium of claim 14, wherein the permeable magnetic underlayer and the recording layer have a saturation magnetization, and wherein the saturation magnetization of the permeable magnetic underlayer is less than or equal to that of the recording layer.

19. The medium of claim 14, where the substrate, the permeable magnetic underlayer, and the recording layer have a thickness that is less than or equal to five micrometers.

20. A method comprising:

applying a recording layer to a permeable magnetic underlayer; and

regulating the thickness of the recording layer as a function of the width of a gap on a recording head.

21. The method of claim 20, further comprising regulating the thickness of the recording layer to be no greater than one half the width of the gap on the recording head.

22. A method comprising:

passing a recording field through a recording layer of a magnetic recording medium; and

regulating the shape of the recording field with a permeable magnetic underlayer.

23. The method of claim 22, further comprising regulating a perpendicular component of the recording field with the permeable magnetic underlayer.

24. The method of claim 23, further comprising increasing the perpendicular component of the recording field and decreasing a horizontal component.